

2013 Maryland FMP Report (May 2014)

Section 19. Tautog (*Tautoga onitis*)

Chesapeake Bay FMP

The Atlantic States Marine Fisheries Commission (ASMFC) is developing a new benchmark stock assessment for tautog scheduled for peer review in summer 2014. Regional stock management will be considered during the update since tautog do not migrate coastwide. Atlantic coast tautog remain overfished and overfishing continues.

The Chesapeake Bay and Atlantic Coast Tautog Fishery Management Plan (FMP) was adopted in 1998 by the Chesapeake Bay Program (CBP) to perpetuate the stock and maintain existing fisheries. The CBP FMP adopts ASMFC guidelines and requirements. The CBP FMP was reviewed in 2011. The review evaluated the goals, objectives, strategies, and actions within the 1998 FMP and concluded that the current management framework is appropriate for managing the stock.

Tautog harvest in Maryland is primarily recreational (90%).¹ The 1996 ASMFC Tautog FMP established an interim F of 0.24, a final target $F = 0.15$, and a minimum size of 14". Addenda I and II successively extended the implementation timeframe for F_{target} . Addendum III revised the F_{target} reference point to 0.21 and a biological reference point of 40% spawning stock biomass (SSB, 0.29). Overfishing was defined as $F_{\text{threshold}} = 0.29$. Addendum IV established biological reference points to determine if tautog are overfished: $\text{SSB}_{\text{target}} = 59$ million lbs and $\text{SSB}_{\text{threshold}} = 44$ million lbs. Tautog biomass was below average for 8 years and a rebuilding F_{target} of 0.20 was implemented. The addendum stipulated that only recreational regulations could be implemented to reduce F . Addendum V removed the provision that restricted regulations to the recreational fishery. Addendum VI (2011) required reducing F_{target} to 0.15, a 53% coastwide reduction in harvest. Amendment VI provisions were to be implemented by January 1, 2012. Following Technical Committee recommendations, the 53% coastwide harvest reduction was revised downward to 39% in early 2012.² Maryland implemented regulations in 2012 to achieve the required reduction. Maryland is required to submit an annual compliance report to ASMFC.

Stock Status

Tautog are managed as a single coastwide stock. The 2011 stock assessment update and subsequent corrections determined that, coastwide, tautog are below the $\text{SSB}_{\text{target}}$ of 59.1 million pounds and the $\text{SSB}_{\text{threshold}}$ of 44.3 million pounds. At a SSB_{2009} of 23.5 million lbs, tautog are currently overfished. Overfishing continues to occur since F is estimated to be 0.26 ($F_{\text{target}} = 0.15$).^{2,3,4} Tautog SSB has remained below the threshold value since 1989.³ Recruitment of age 1 fish has remained at low levels since the early 1990s.⁴ Currently, tautog are assessed as a single coastwide stock

rather than regional stocks. The next benchmark stock assessment is in progress and scheduled for peer review in 2014.

Current Management Measures

Maryland's 2014 tautog regulations are a continuation of the 2013 regulations, which are the same for both commercial and recreational fisheries.⁵ The minimum size limit is 16". Fisheries in tidal and coastal waters are limited to 4 fish per person per day during January 1 – May 15 and during November 1 – 26. Harvest is reduced to 2 fish per person per day from May 16 – October 31. Tautog harvest is prohibited from November 27 – December 31. Commercial harvesters are allowed to use hook and line, net, pot, trap, trot line, and seine. One panel on pots and traps must be attached with degradable fasteners to prevent ghost fishing if lost. Recreational anglers are restricted to hook and line.

The Fisheries

Maryland's commercial and recreational tautog harvest are minor components of the total coastwide landings. Commercial landings have remained at or below one thousand pounds since 2007 due to the limited possession allowance. Maryland's tautog landings have averaged ~1% of coastwide landings (Figure 1).^{6,7} Estimated landings for 2013 were 1,427 pounds. Reported recreational landings in 2012 were 3,161 fish (percent standard error = 27%).⁶ The majority of tautog are caught by the recreational fishery.¹

Issues/Concerns

Tautog are dependent on bottom structure, but managed as a single Atlantic coast stock. Egg and larval dispersal is believed to be coastwide. Juvenile and adult migration is limited and would best be managed as regional stocks.⁸ Regional stocks and management options will be examined during the 2014 stock assessment update process.

Oyster reefs and submerged aquatic vegetation (SAV) are important estuarine habitats for tautog. Restoration of these habitats in Chesapeake and Coastal Bays is important, particularly for juveniles. Adult tautog are dependent on hard bottom and deep water coral habitats, found in ocean waters, whose extent are poorly documented.

Figure 1. Maryland and coastwide commercial tautog landings (lbs): 1950-2013.^{6,7} Discrepancies between commercial landings reported by National Marine Fisheries Service (NMFS), Atlantic Coast Cooperative Statistics Program (ACCSP), and MD Department of Natural Resources (DNR) are due to differences in data confidentiality requirements.

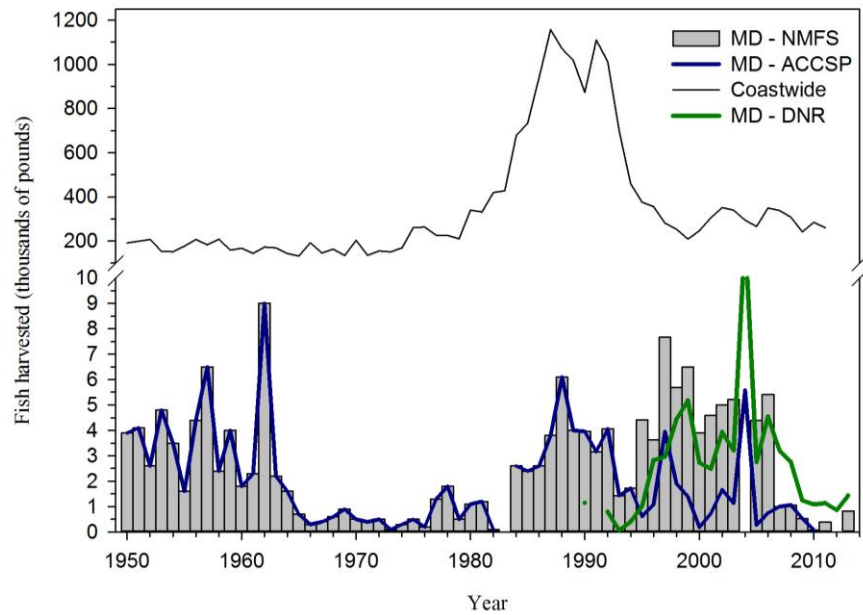
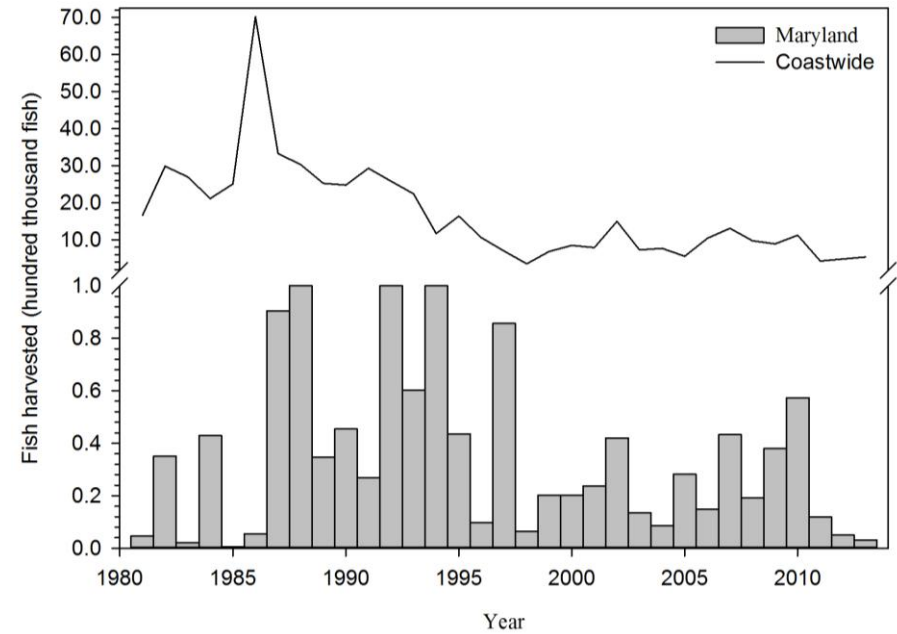


Figure 2. Maryland and coastwide recreational tautog harvest (number of fish): 1981-2013 (preliminary).⁶ Catch estimates for 2004-2011 were recalculated from the Marine Recreational Fisheries Statistics Survey (MRFSS) to the Marine Recreational Information Program (MRIP).



References

- ¹ Atlantic States Marine Fisheries Commission. 2013. 2013 review of the Atlantic states marine fisheries commission fishery management plan for tautog (*Tautoga onitis*): Fishing year 2012. Atlantic States Marine Fisheries Commission. Arlington, Virginia.
- ² ASMFC Tautog Board Sets Required Harvest Reduction at 39%. (2012, April 2). ASMFC News Release, PR12-17.
- ³ Atlantic States Marine Fisheries Commission. 2011. Addendum VI to the interstate fishery management plan for tautog. Atlantic States Marine Fisheries Commission. Arlington, Virginia.
- ⁴ Atlantic States Marine Fisheries Commission. 2011. 2011 Tautog Assessment Update Summary. Atlantic States Marine Fisheries Commission. Arlington, Virginia.

- ⁵ Maryland Department of Natural Resources. 2014. Maryland's 2013 tautog (*Tautoga onitis*) compliance report to the Atlantic States Marine Fisheries Commission. Maryland Department of Natural Resources, Fisheries Service. Annapolis, Maryland.
- ⁶ Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division. <http://www.st.nmfs.noaa.gov/>
- ⁷ Atlantic Coastal Cooperative Statistics Program. (1950 - 2013) Commercial Landings (Dealer Reports) - Non-Confidential - Landings by State by Species; generated by Marek Topolski; using ACCSP Data Warehouse [online application], Arlington, VA: Available at <http://www.accsp.org> --> Data Center --> Data Warehouse --> Login
- ⁸ Tuckey, T., N. Yochum, J. Hoenig, J. Lucy, and J. Cimino. 2007. Evaluating localized vs. large-scale management: The example of tautog in Virginia. Fisheries 32(1): 21–28.

1998 Chesapeake and Atlantic Coast Tautog Fishery Management Plan Implementation Table (updated 5/14/2014)			
Strategy	Action	Date	Comments
1) Implement minimum size and possession limits applicable to the commercial and recreational fisheries to prevent overexploitation. Monitor size composition of landings in the recreational fishery to prevent compression of age structure in the population. Use size composition of fish in the recreational fishery and total landings in the commercial fishery as triggers to implement further management of the fishery, should statistically significant compression of the age structure occur. This plan recommends that the Secretary of Commerce implement minimum size and possession regulations for tautog in the EEZ that are in accordance with state minimum size requirements contained in the plan. It is the intention under the Atlantic Coastal Fisheries Conservation and Management Act to have EEZ fisheries regulated consistent with state possession and landing laws, and that the more stringent of state or federal law will apply regardless of whether fish are caught in the EEZ or in state waters.	1.1) VA, MD and PRFC will implement a minimum size limit of 14" in the recreational and commercial tautog fisheries. Minimum size limits may be changed as more data becomes available on stock condition and biological reference points are re-evaluated.	1998 2003 2005 Continue	MD commercial and recreational fisheries have a 16" minimum size, 4 fish/person/day from January 1 – May 15, 2 fish/person/day from May 16 – October 31, 4 fish/person/day from November 1 – 26, and is closed from November 27 – December 31. VA has a 16" minimum size, 3 fish/person/day creel, and a recreational closure from May 1 – Sept 19. VA commercial fishery has a 15" minimum size, no catch limit, and seasonal closures from January 22 – last day of February and May 1 - October 31. PRFC has a 14" minimum size limit and no harvest restrictions for both commercial and recreational fisheries.
	1.2) VA, MD and PRFC will reduce fishing mortality to interim and target rates, as defined by ASMFC, through a combination of possession limits, gear, seasons, and/or other restrictions. Target rates may be changed and management measures adjusted as more data becomes available to manage the stock. Due to differences in F between MD and VA, different management strategies may be necessary to reach the target F set by ASMFC. The jurisdictions will continue to work towards a unified, Baywide management strategy.	1998 2000 2003 2005 2011 2011 2012 Continue	A benchmark coastal stock assessment was completed in 2005 (using data from 1981-2004). Results indicate that F declined from 0.71 to 0.299. Overfishing was redefined as $F_{40\%SSB}=0.29$. The most recent 3-year average ($F=0.389$) exceed the ASMFC rebuilding target ($F=0.2$), so tautog are being overfished. Tautog have a SSB_{2009} of 23.5 million lbs, 20.8 million lbs below the $SSB_{threshold}$ meaning tautog are currently overfished. ASMFC Addendum VI was implemented to reduce F to 0.15, a 53% reduction, and prohibit possession of tautog caught in federal waters. The next ASMFC stock assessment is scheduled for 2014. MD's 2012 harvest reduction was decreased from 48% to 39%. MD 2013 commercial landings are estimated at between 824 lbs (NMFS) to 1,427 lbs (MD DNR) . Recreational landings are estimated at 3,000 fish (NMFS) . VA 2013 commercial landings were 13,6 00 lbs and 2012 recreational landings were 5,900 fish (NMFS) .
	1.3) VA and MD waters will continue to require degradable fasteners in tautog pots and traps utilizing either: <ul style="list-style-type: none"> • Untreated hemp, jute, or cotton string of 3/16" (0.48 mm) or smaller • Magnesium alloy, timed float releases (pop-up devices) or similar magnesium alloy fasteners • Ungalvanized or uncoated iron wire of 0.09" (2.39 mm) or smaller. 	1997 Continue	A pot and trap shall have hinges on one panel/door made of untreated hemp or jute string 3/16" (4.8 mm) diameter or smaller, magnesium alloy fasteners or ungalvanized/uncoated iron wire of 0.094" (2.39 mm) diameter.
2.1) VA and MD will work with Virginia	2.1) The management agencies will gather data on	Continue	Annual fecundity estimates are much higher than

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Institute of Marine Science, Old Dominion University, University of Maryland, Smithsonian Institute and National Marine Fisheries Service's Marine Recreational Fisheries Statistics Survey to conduct research into the size, age and sex composition of tautog in the Chesapeake Bay. The agencies' stock assessment departments will continue to collect information on size composition to monitor the status of tautog stocks. This stock assessment data will be used to determine a baseline of age and sex distribution for the local stock, significant deviation from which will be used as a trigger mechanism to determine the need for future management measures.	age, size and sex distribution to be used as a baseline measurement of a healthy population and will encourage research into the possibility of sex-reversal in the tautog population.	1989-1999 Continue	previously thought. All states are required to collect data to support the coastwide stock assessment. Data are collected from cooperating head boat captains, trawl, and seine.
	2.1 A) VA will continue the Baywide trawl survey of estuarine finfish species and crabs to measure size, age, sex, distribution, abundance and CPUE.	Continue	Data from the Baywide trawl survey is used in the ASMFC stock assessment. However, very little data is collected on tautog.
	2.1 B) VA implemented a mandatory reporting system for commercial licensees beginning January 1, 1993. Maryland's mandatory reporting system has been in effect since 1944 (excluding eel). Improved reporting of commercial landings, along with more detailed information on catch location and effort are some of the expected benefits of these programs.	Continue	Commercial reporting has been improved through more stringent penalties for late reporting and no reporting.
	2.1 C) VA will continue to supplement the Marine Recreational Fisheries Statistics Survey to obtain more detailed catch statistics at the state level. VA's new recreational saltwater fishing license may provide funding for more extensive surveys of the state's recreational fishery.	2009 Continue	MD contracted to have supplemental MRFSS recreational data collected.
		2011 Continue	MD implemented a coastal recreational saltwater license requirement.
		2011 On-going	The MRFSS survey is being improved through implementation of the MRIP program. NMFS requires all states to register recreational fishermen to create a more robust data base to estimate recreational harvest.
	2.1 D) MD's Coastal Bays Fisheries Investigation will be expanded by conducting a creel survey from recreational headboats. The survey will collect biological data on tautog such as sex, length, age and information on recreational fishing effort.	1972 Continue	Juvenile tautog are sampled during the summer and fall coastal bays trawl and seine survey (not designed to target tautog).
		1999 Continue	MD Coastal Bays Fisheries Investigation annually collects age, length and sex data for tautog purchased from several commercial fishermen.
2.2) The jurisdictions will promote research to determine the extent of migration and mortality in localized tautog populations. As reliance of this species on structure for both food and shelter may limit populations in the Chesapeake Bay area, studies designed to determine the relationship between population size and available shelter and food sources should likewise be encourages.	2.2) Research on migration of tautog between areas is encouraged. Tagging experiments to provide data on tautog migration may be funded from sales of saltwater fishing licenses. The Virginia Game Fish Tagging Program will be continued.	Continue	A study on the seasonal occurrence of tautog in the lower CB indicates that most fish tagged and released in inshore waters remain inshore for the winter rather than move offshore (Arendt, Lucy and Munroe, 2001).
		2007 On-going	VA initiated Marine Sportfish Collection Project to collect sex, length, and age data. Freezers were set up for recreational anglers to donate whole fish or carcasses.

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Strategy	Action	Date	Comments
		Continue	VA initiated Saltwater Fisherman’s Journal where anglers log their fishing experiences and anecdotal information.
3.1.1) Restoration of aquatic reefs could lead to increased habitat for tautog. Jurisdictions will continue to expand and improve their current oyster restoration programs with periodic program evaluations to ensure maximum success.	3.1.1A) MD and VA will continue the implementation of the 1994 Oyster FMP which combines the recommendations of both the Virginia Holton Plan and the Maryland Roundtable Action Plan. Strategies in both VA & MD have taken a new focus as the programs intensify efforts to manage around the devastating oyster diseases, Dermo and MSX, currently infecting Chesapeake Bay oysters.	Continue 2003 2004	The 1994 Oyster FMP has been revised and adopted in 2004. It incorporated concepts from the old FMP and the Aquatic Reef Habitat Plan. Sanctuary and special management areas are protected from harvest and oyster habitat is being restored.
		2008	<i>Crassostrea virginica</i> (native oyster) and not <i>Crassostrea ariakensis</i> (Asian oyster) will be used for reef development following the Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster.
		2009 - 2010	MDNR has expanded the oyster sanctuary network from 9% to 25% (app. 9,000 acres) of the available oyster habitat. Both recreational and commercial fish species will benefit from improved/protected oyster bar habitat.
		2012 Continue	Oyster aquaculture is increasing. 1,483 acres of aquaculture have been permitted since 9/7/2011. Several thousand acres are in application review.
		2007 Continue	MD ARC, MARI, and Maryland’s Artificial Reef Management Plan were created and several reefs have been built in the Bay.
	3.1.1B) MD and VA will continue the implementation of the Aquatic Reef Habitat Plan. “The purpose of the Aquatic Reef Habitat Plan is to guide the development and implementation of a regional program to rebuild and restore reefs as habitat for oysters and other ecologically valuable aquatic species.”	Continue	Reefs are qualitatively monitored with underwater video. There is no set sampling schedule or protocol.
2010 On-going		ARC and MARI have begun support for shallow water (<20 ft.) reef projects.	
3.1.2) The creation of new artificial reefs and the expansion and improvement of preexisting reefs will provide additional habitat for the tautog population.	3.1.2A) Jurisdictions will continue to maintain, expand, and improve their artificial reef programs. Since 1995, VA has developed 3 new reef sites within the Bay and expanded several existing sites, deploying more than 6,000 designed structures (concrete tetrahedrons) and over 5,000 tons of concrete rubble. MD has designated 3 sites as oyster sanctuaries where harvest is not allowed: Plum Point, lower Severn River and Cambridge. MD will also be examining the efficacy of small hill sanctuaries at 3 sites: Tangier, Choptank and Strong Bay (Chester	1996-2006	MD terminated its program in 1996. Artificial reef development was administered in the Chesapeake Bay by MD Environmental Service and in the Atlantic Ocean by the Ocean City Reef Foundation (OCRF).
		2007 On-going	MD Artificial Reef Committee and the MD Artificial Reef Initiative (MARI) were established to develop reefs in cooperation with OCRF. Both MARI and OCRF accept private donations while MD contributes funds when available for reef development projects.

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	R.).	Continue	In VA, artificial reefs are being funded through Recreational Advisory Board. All artificial reefs are created with funds from recreational license revenues adhere to gear type prohibitions.
		2008	44 NY subway cars were deployed off Ocean City.
		2011	USN Destroyer <i>Radford</i> was reefed on August 10, 2011. The vessel has since broken into 3 pieces but remains upright.
		On-going	MARI and OCRC continue to develop existing and new artificial reefs as funding and materials become available. For the most up-to-date information on the MD artificial reef program go to http://www.dnr.maryland.gov/fisheries/reefs/ and for the VA artificial reef program go to http://mrc.virginia.gov/vsrfd/reef.shtm
	3.1.2B) VA has recently prohibited the use of all gear except recreational rod and reel, hand-line, spear, or gig on four artificial reefs in state waters. The result of this regulation is similar to the MAFMC/ASMFC Special Management Zones that protect vital tautog habitat.	Continue	MD and VA both adopted legislation that prohibits hydraulic clamming (and crab dredging in VA) in or near SAV beds. MD has a prohibition on hydraulic dredging in coastal bays. It is allowed in MD Chesapeake Bay waters, but not within a delineated SAV bed. There is no required setback from the bed.
3.2.1) Jurisdictions will continue efforts to: “achieve a net gain in SAV distribution, abundance, and species diversity in the Chesapeake Bay and its tributaries over current populations”.	3.2.1.1A) Protect existing SAV beds from further losses due to increased degradation of water quality, physical damage to the plants, or disruption to the local sedimentary environment as recommended by the Chesapeake Bay Submerged Aquatic Vegetation Policy Implementation Plan.	Continue	MD and VA prohibit hydraulic clamming and crab dredging (VA) in or near SAV beds. MD prohibits hydraulic dredging within delineated SAV beds, but there is no required setback.
	3.2.1.1B) The Guidance for Protecting Submerged Aquatic Vegetation in Chesapeake Bay from Physical Disruption was developed in response to the above action and should be used by agencies making decisions that influence SAV survival in Chesapeake Bay. The following recommendations from the guidance document should be strongly considered when making decisions that impact SAV, with special emphasis on SAV that falls within the salinity range of juvenile. 1. Protect SAV and potential SAV habitat from	Continue	MD implemented a living shorelines program in 1970 to encourage vegetative shoreline stabilization. Regulations are in place to prohibit dredging through SAV beds. Tiered designation and prioritization of SAV beds has not been implemented. Avoidance of dredging, filling and construction impacts to SAV is strictly enforced by MDE and USACE with input from DNR, USFWS, and NMFS. MD has not established undisturbed buffers. VA has established buffer criteria.

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	physical disruption. Implement a tiered approach to SAV protection, giving highest priority to protecting Tier I and Tier II areas but also protecting Tier III areas from physical disruption.	2003	The revised SAV goal adopted by Chesapeake Bay Program was restoration of 185,000 acres of SAV by 2010 and planting 1,000 acres of SAV by 2008.
	2. Avoid dredging, filling or construction activities that create turbidity sufficient to impact nearby SAV beds during SAV growing season.	2008	MD legislated that shoreline stabilization projects must use living shoreline techniques unless demonstrated to be infeasible.
	3. Establish an appropriate undisturbed buffer around SAV beds to minimize the direct and indirect impacts on SAV from activities that significantly increase turbidity.	2012	The SAV planting goal was revised to be the planting of 20 acres per year.
	3.2.1.2) Set and achieve regional water and habitat quality objectives that will result in restoration of SAVs through natural revegetation as recommended by the Chesapeake Bay SAV Policy Implementation Plan.	Continue	Water quality criteria have been adopted http://www.chesapeakebay.net/restoringwaterquality.aspx?menuitem=14728 .
	3.2.1.3) Set regional SAV restoration goals in terms of acreage, abundance, and species diversity considering historical distribution records and estimates of potential habitat as recommended by the Chesapeake Bay SAV Policy Implementation Plan.	2003 Continue	Chesapeake Bay Program adopted a revised the SAV goal to plant 1,000 acres of SAV by 2008; 173 acres have been planted to date (http://www.chesapeakebay.net/indicators/indicator/planting_bay_grasses). The SAV planting goal was revised in 2012 to the planting of 20 acres per year. One acre was planted during 2013. The restoration goal is 185,000 acres of SAV (see 3.2.1A). VIMS annually surveys SAV distribution in Chesapeake Bay. 2013 SAV acreage was 59.9 thousand.
3.2.2) The jurisdictions will use The Submerged Aquatic Vegetation Habitat Requirements and Restoration Targets: A Technical Synthesis as a guide to set quantitative levels of relevant water quality parameters necessary to support continued survival, propagation and restoration of SAV, as well as established the regional SAV restoration target goals defined earlier in this section.	3.2.2) When choices must be made in selecting SAV restoration projects, to fund and support under the Chesapeake Bay SAV Policy Implementation Plan, specific attention should be given to action items that lead to the protection and restoration of SAV found within the juvenile tautog habitat range.	Continue	More emphasis is being placed on multispecies benefits when considering restoration projects. Long-term survival of SAV plantings has been limited. STAC reviewed the SAV restoration projects and concluded they were operationally successful but functionally unsuccessful. SAV aerial surveys continue.
3.3) In 1998, the Chesapeake Executive Council adopted the Chesapeake Bay Wetlands Policy in recognition of the ecological and economic importance that wetlands play in the Chesapeake Bay. The Wetlands Policy establishes an immediate goal of no net loss	3.3) The jurisdictions should strive towards achieving the following, especially in the salinity range of tautog. a) define the resource through inventory and mapping activities b) protect existing wetlands	Continue	Wonders of Wetlands (WOW) curriculum was developed GIS mapping activities are underway to target protection and restoration of habitat resources. Habitats are not targeted to benefit a specific species.

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with a long-term goal of a net resource gain for tidal and nontidal wetlands. It identifies specific actions necessary to achieve both the short term goal of the Policy, “no net loss” and the long term goal of “a net resource gain for tidal and nontidal wetlands.”	c) rehabilitate, restore and create wetlands d) improve education e) further research.	2006 Continue	MD is developed a Blue Infrastructure that includes mapping structural habitat and SAV.
		2009 Continue	Wetland mosquito ditches from the 1930s-1940s are being modified to reduce tidal flow and restore wetland hydrology and function.
		2011 On-going	Between 2010 and 2011, 3,775 acres of wetlands were established or re-established and 107,239 acres were enhanced or rehabilitated.
		2013/2014 On-going	The new Chesapeake Bay Program Watershed Agreement has a wetlands outcome to create or reestablish 85,000 acres of wetlands and enhance the function of wetlands on an additional 150,000 acres.
3.4.1) Jurisdictions will continue efforts to improve Baywide water quality through the efforts of programs established under the 1987 Chesapeake Bay Agreement. In addition, the jurisdictions will implement new strategies, based on recent program reevaluations, to strengthen deficient areas.	3.4.1A) Based on 1992 baywide nutrient reduction plan reevaluation, the jurisdictions will: a) expand program efforts to include the tributaries b) intensify efforts to control nonpoint sources of pollution from agriculture and developed areas c) improve on current point and nonpoint source control technologies.	Continue	Maps that indicate regions of concern for living resources have been developed.
		2009	See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/status_reducingpollution.aspx?menuitem=19859 .
		2009	President Barack Obama’s executive order recommitted federal agencies to Bay restoration and regulatory enforcement.
		2010	EPA established a Bay wide TMDL (aka: pollution diet). Each jurisdiction must establish 2 year milestones for progress towards meeting its TMDL.
		2012	Legislation has been passed for restrictions on new developments using septic systems.
		2013	Legislation for a stormwater fee based on impervious surface coverage was enacted.
	3.4.1B) Based on the 1994 Chesapeake Bay Program Toxics Reduction Strategy Reevaluation Report, the jurisdictions will emphasize the following 4 areas: a) pollution prevention: target “regions of concern” & “areas of emphasis” b) regulatory program implementation: insure that	Continue	See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/status_reducingpollution.aspx?menuitem=19859 Chesapeake Bay Program is monitoring levels of

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	<p>revised strategies are consistent with and supplement pre-existing regulatory mandates</p> <p>c) regional focus: identify and classify regions according to the level of contaminants</p> <p>d) directed toxics assessment: identify areas of low level contamination, improve tracking and control nonpoint sources.</p>		mercury, PCBs, PAHs, organophosphate and organochloride pesticides.
	3.4.1C) The jurisdictions will continue to develop, implement, and monitor their tributary strategies designed to improve bay water quality.	Continue April 2003	Ambient water quality criteria of DO, water clarity, and chlorophyll-a have been adopted for the Chesapeake Bay.
3.4.2 The Chesapeake Bay Program partners will “Plan for and manage the adverse environmental effects of human population growth and land development in the Chesapeake Bay watershed.” In 1996, the Chesapeake Bay Program accepted the Priorities for Action for Land, Growth and Stewardship in the Chesapeake Bay Region as a framework to address land use and development pressures in the Chesapeake Bay. This approach recognizes that communities are the basic unit for addressing growth, land-use and long-term stewardship of the natural environment. These priorities are voluntary actions which are expected to be accomplished through a variety of public and private partners, including but not limited to the Chesapeake Bay Program. Jurisdictions will forward the goals of the Priorities for Action, which encourage sustainable development patterns. Given the fact that tautog are particularly vulnerable to suspended solids which abrade epithelial tissues and to decreasing SAV and shellfish beds which serve as habitat and feeding areas, the goals of the Priorities for Action which are germane to nutrient and sediment load reduction will be promoted.	<p>3.4.2) Encourage efficient development patterns which reduce nutrient and sediment loads to the Chesapeake Bay and promote responsible land management practices and decisions regarding present and future development by pursuing the following:</p> <ol style="list-style-type: none"> 1) Revitalize existing communities. Revitalization efforts can assist existing communities and help reduce sprawl by encouraging the use of state-of-the-art storm water management and pollution prevention strategies. 2) Encourage efficient development patterns. Ecologically sound, efficient development patterns encourage higher population density; compact and contiguous development. Benefits to the Bay include reduced impervious surfaces; conservation of farms, forests, and wetlands. 3) Foster resource protection and land stewardship. Cooperation and linkages among local watershed protection planning efforts should be increased to foster a regional sense of stewardship toward the bay’s natural resources. The development of new policies that integrate natural and community infrastructure in public and private planning, development and protection efforts will further this goal. 	Continue	<p>See Chesapeake Bay Program website for updates on land stewardship. http://www.chesapeakebay.net/status_protectingwatersheds.aspx?menuitem=19876</p> <p>MD developed curriculum “Where Do We Grow from Here?” about population growth and its impacts on the Bay.</p>

Acronyms

ARC - Artificial Reef Committee
ASMFC – Atlantic States Marine Fisheries Commission

CB – Chesapeake Bay
CCA MD – Coastal Conservation Association of Maryland
CPUE – Catch per Unit Effort
DO – Dissolved Oxygen

EEZ – Exclusive Economic Zone
F – Fishing Mortality
FMP – Fishery Management Plan
GIS – Geographic Information System
MAFMC – Mid-Atlantic Fishery Management Council
MARI - Maryland Artificial Reef Initiative
MD DNR – Maryland Department of Natural Resources
NMFS – National Marine Fisheries Service
OCRf - Ocean City Reef Foundation
PAH – Polycyclic Aromatic Hydrocarbon
PCB – Polychlorinated Biphenyl
PRFC –Potomac River Fishery Commission
SAV – Submerged Aquatic Vegetation
USACE – United States Army Corps of Engineer
USFWS – United States Fish and Wildlife Service
USN – United States Navy
VIMS – Virginia Institute of Marine Science